Managing Biofouling at the International Level:
Challenges and Opportunities

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OVERVIEW

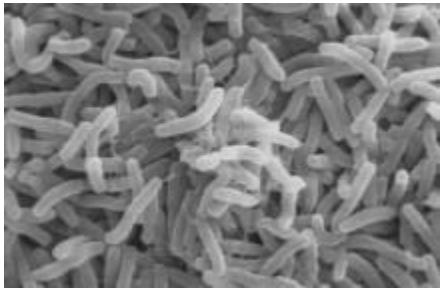
1. Summary of the issues
2. What's happening in New Zealand
3. What's happening at IMO
4. Summary of Challenges & Opportunities

MARINE INVASIVES

- One of the five greatest threats to our Marine Ecosystems
- Impacts from marine invasions are almost always irreversible

IMPACTS

- **Ecological:** Competition, Predation, Altering trophic dynamics, biodiversity or nutrients
- **Economic:** Impacts on fisheries and aquaculture, Infrastructure damage, Impacts on tourism, Costs of management
- **Human Health:** Toxic species, pathogens
- **Socio-cultural:** Amenity, employment, damage to culturally important species or food sources



VECTORS

- **Biofouling**
- **Ballast water**
- Aquarium Trade
- Intentional introductions
- Natural dispersal
- Aquaculture feed & stock
- Bait fish
- Solid ballast

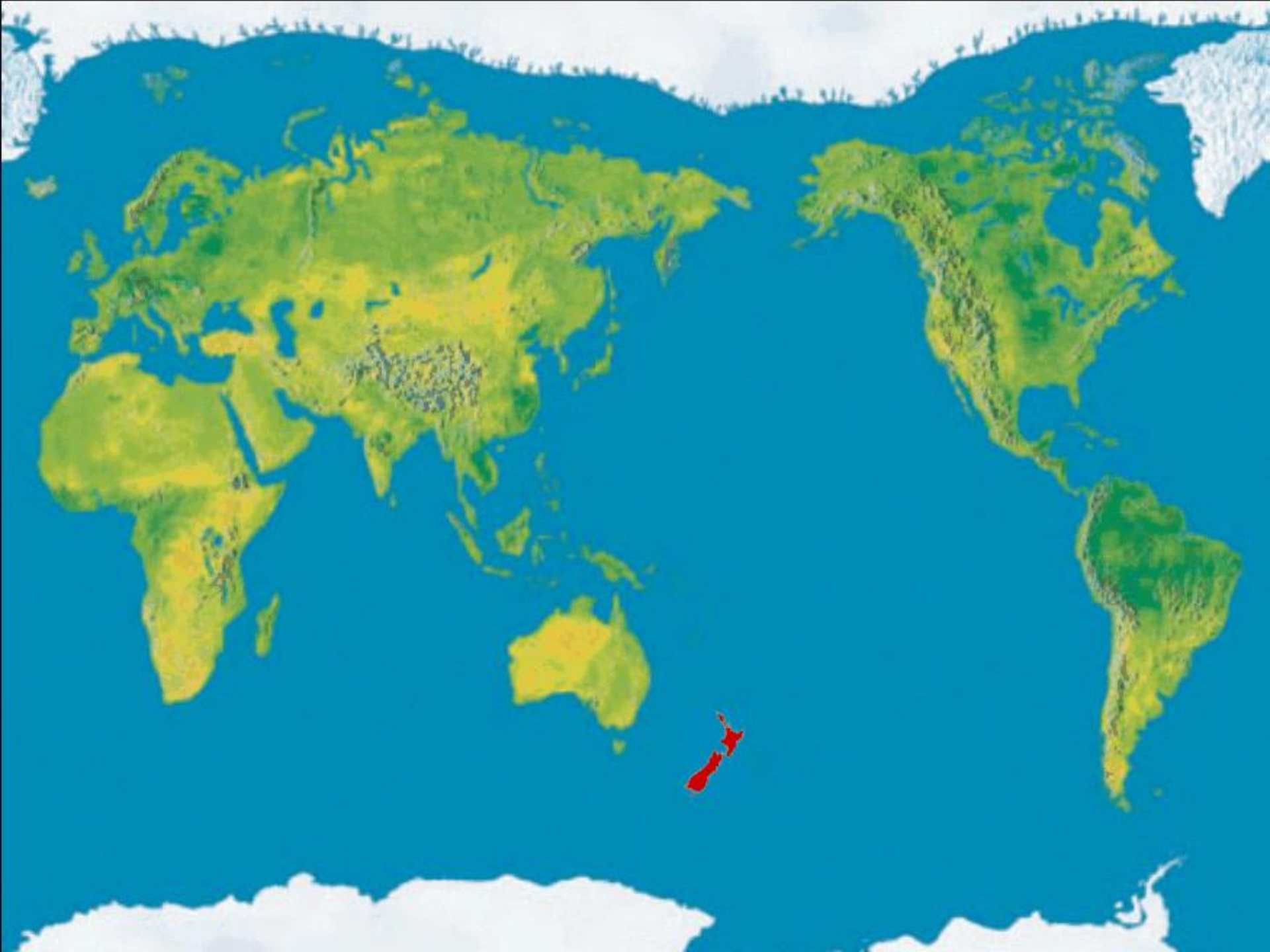
BIOFOULING ON VESSELS

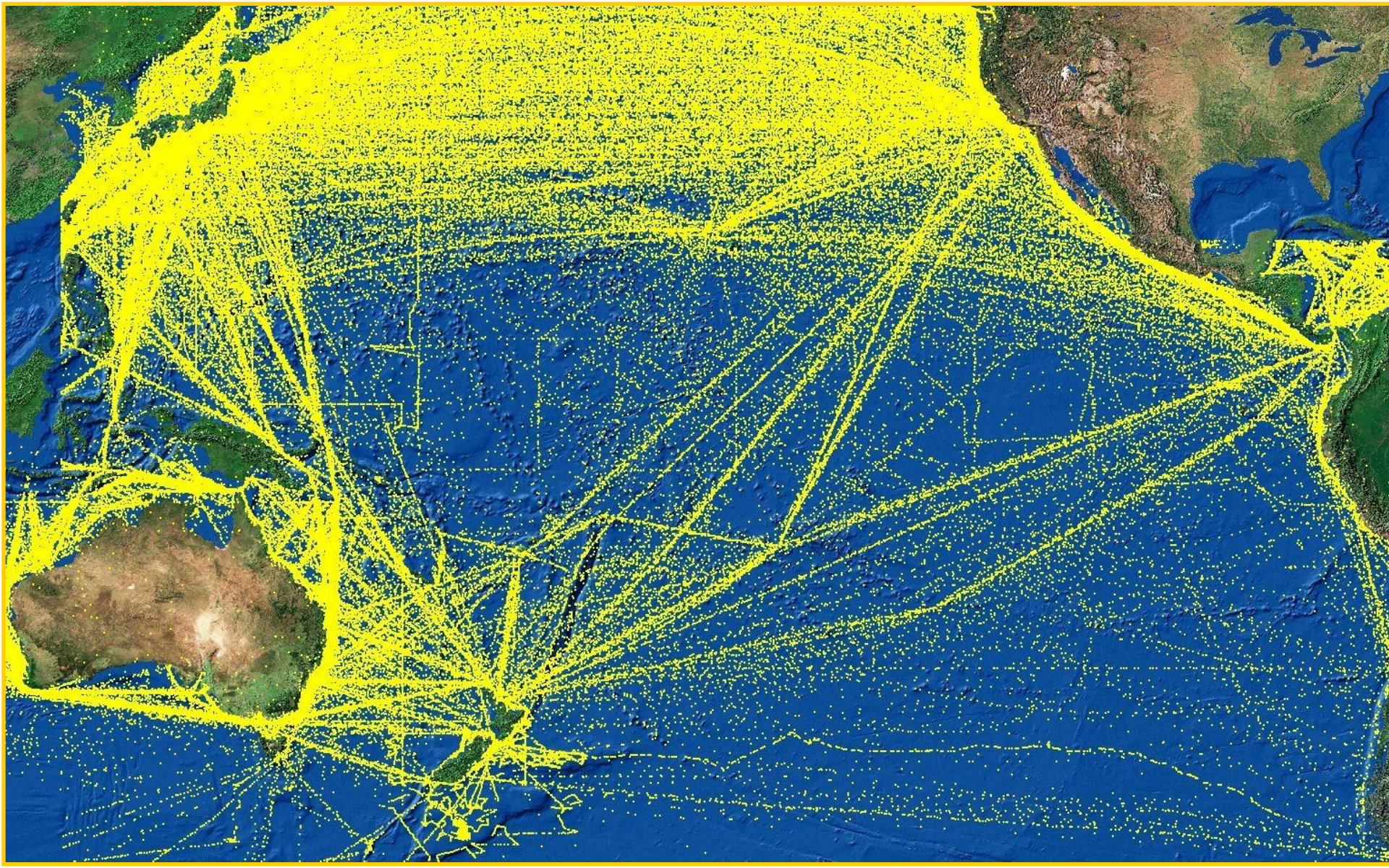
- Thought to be a diminishing risk but:
  - **Faster vessel speeds increase survival of some species**
  - **Fouling of niche areas recognised as a significant issue**
  - **Phase-out of TBT limits the available antifouling tool box**
  - **Mounting evidence of biofouling as the primary vector for invasion**

EVIDENCE OF BIOFOULING INVASIONS

- Hawaii: 74% (Eldredge & Carlton 2002)
- Japan: 42% (Otani 2006)
- New Zealand: 69% (Cranfield et al. 1998)
- New Zealand: 87% (Kospartov et al. 2008)
- Port Phillip Bay: 78% (Hewitt et al. 2004)
- North Sea: >50% (Gollasch 2002)
- Coastal North America: 70% (Fofonoff et al. 2003)

3. WHAT'S HAPPENING IN NEW ZEALAND





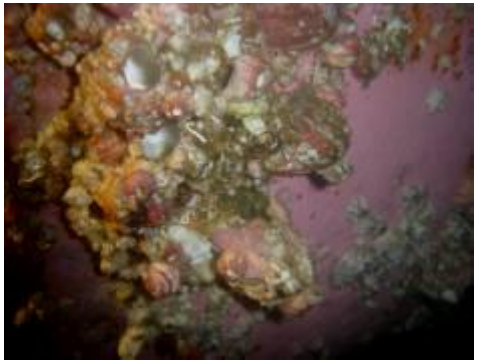
BIOFOULING INVASIONS IN NEW ZEALAND

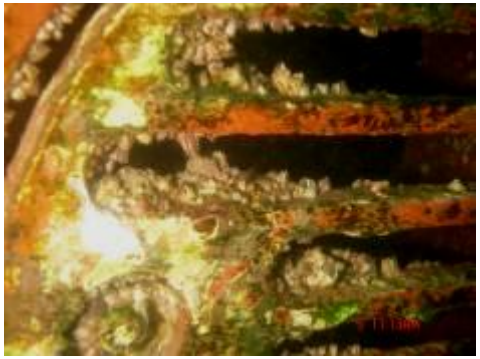
- New Zealand's is a 'biological economy', reliant on:
  - Tourism
  - Primary production and resource use (including fisheries and aquaculture)
  - Clean Green image
- New Zealanders see biosecurity as one of the issues they are most concerned about
- Strong border biosecurity requirements

TRIGGERS FOR NZ ACTION

- Ongoing biofouling invasions and impacts
  - **Sabella spallanzanii, Styela clava, Eudistoma elongatum, Pyura praeputialis, Ocean Patriot**
- Research findings
  - **Niche areas, slow movers, poorly maintained vessels, maintenance history, voyage history**
- A critical gap in New Zealand's border

RESEARCH





BIOFOULING RESEARCH KEY FINDINGS

- All vessel types likely to have some biofouling;
- Biofouling organisms were predominantly arthropods (barnacles), tube worms, bryozoans, bivalves, macroalgae;
- Of 187 species identified, >65 % non-indigenous to NZ and 73 % of those had not yet established in NZ;
- The greater the amount of biofouling, the higher the number of non-indigenous species present
- Biofouling most common in niche areas
- Slow movers and poorly maintained vessels are high risk

http://www.ifremer.fr/delec-en/images/bb/tuile_ficopomatus.jpg

DEVELOPING AN IHS

- **Risk Assessment**
  - All vessels have some biofouling
  - Wide range of biofouling taxa are a risk to NZ – anything more than a slime layer
- **Consultation on draft IHS**
  - Acknowledge the risks
  - Concerns about implementation and going ahead of the IMO
- **Working through the issues with industry**
  - niche areas, slime or slime+, border actions, equivalent levels of protection

2. WHAT'S HAPPENING AT IMO

TRIGGERS FOR INTERNATIONAL ACTION

- Research findings
  - **Niche areas**
  - **Number of species likely to be transferred as biofouling vs ballast**
- Ongoing biofouling invasions and impacts
- Developing national measures for an international industry

ISSUES TO BE ADDRESSED

- Antifouling paint application and use
- Minimising biofouling in niche areas
- In-water cleaning (including standards)
- A standard for ‘clean’
- Recording and Reporting
- Design of dry dock and other vessel cleaning facilities
- Different measures for different vessel types

TIMELINE OF BIOFOULING AT IMO

IMO

2005/6	Lunchtime presentations from Australia and New Zealand on concerns about biofouling invasions
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2011	

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2011	BLG 15 will consider a close to final Guideline

OUTSTANDING ISSUES FOR FINALISATION OF GUIDELINES

- Definitions
- Finalising the details
- Getting ‘airtime’ at IMO
- Dealing with recreational craft
- Evaluation timeframe

4. CHALLENGES AND OPPORTUNITIES

CHALLENGES & OPPORTUNITIES: ALL MEASURES

- Technological developments
  - In-water cleaning with capture
  - Niche area management
  - Design and engineering solutions
- Managing biofouling considering related environmental and operational issues:
  - Invasive species, GHG emissions, AFS contaminants, efficiency and safety

CHALLENGES & OPPORTUNITIES: ALL MEASURES cont.

- Shifting focus from hull AFS for operational reasons to holistic biofouling management
- Effectively implementing a ‘clean before you go’ approach, especially slow vessels
- Having effective biofouling management solutions for all vessel types
- Eradication and response tools

CHALLENGES & OPPORTUNITIES: IMO MEASURES

- Finalising the Guidelines
- Getting uptake of voluntary measures
- Getting the data to effectively measure efficacy of the specific measures and the Guidelines as a whole
- Driving technology change
- Determining whether mandatory measures are required

CHALLENGES & OPPORTUNITIES: NATIONAL MEASURES

- Moving ahead of an international approach in regulating an international industry
- Setting the right standard
- Decision support / regulatory tools
  - **In-water cleaning risk assessment**
  - **Inspection and verification**
  - **Dealing with non-compliant vessels**
  - **Recording and reporting**
- Getting and sharing the data to improve both national and international measures

SUMMARY

- EDUCATE
- INTEGRATE
- INNOVATE

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